Chemical and Biological Defense Information Analysis Center

CBIAC

Serving the CB Defense Community

NEWSLETTER

Spring-1996 Vol. 2, No. 2

A U.S. Department of Defense Information Analysis Center (IAC) sponsored by the Defense Technical Information Center (DTIC)

IRAQ'S BIOLOGICAL WEAPONS PROGRAM

By Terence Taylor

The scope and extent of the offensive biological weapons program revealed by the Iraqis following the defection of General Hassan Kamal in August 1995 surprised many. It was a startling revelation, both in terms of its scope and the nature of the likely battlefield use. In their program it seems that the Iraqis had examined and weaponized bacteria, viruses and fungi, both in the form of living organisms, as well as toxin derivatives. The weapons effects sought ranged from lethal agents and incapacitants to crop attack agents. The delivery means included surface to surface Al Hussein missiles and field artillery. This blend of strategic and tactical use of biological weapons was a particular surprise. Over four years of inspection by the UN Special Commission (UNSCOM), although suspicions were high, had revealed little of substance about the scale and nature of the program. However, just enough evidence was found to convince the Security Council that an offensive biological weapons program of some sort existed. This experience offers lessons for those considering a verification protocol for the Biological and Toxin Weapons Convention.

A reminder of UNSCOM's mission in relation to Iraq's weapons of mass destruction is in order. Briefly, under Security Council resolutions 687 and 715 of 1991, UNSCOM is required to:

• Find and destroy all of Iraq's weapons of mass destruction and missiles with a range of more than 150 kilometers.

• Conduct monitoring of the undertaking by Iraq not to use, develop or acquire these weapons and missiles in the future.

As far as biological weapons are concerned, the scope of the inspection and monitoring system covers all stocks of agent, delivery means and related sub-systems, all components, research and development activities and support and manufacturing facilities. For their part the Iraqis were required to make a full and final disclosure of all their programs referred to in the Security Council resolutions. As far as biological weapons were concerned, Iraq claimed there were no programs at all. After initial pressure they said that they only had a limited defensive program in which ten or so people were involved and just two facilities. They claimed that their defensive work involved only botulinum toxin and anthrax. Therefore, unlike the other weapons teams, the biological weapons inspection teams and planners at UNSCOM headquarters had virtually a blank sheet of paper on which to base their activities. There was sufficient evidence from a number of sources that an offensive program existed, but uncovering the evidence to meet the Security Council requirements of destruction and long term monitoring was to prove a frustrating task. In the end UNSCOM was compelled to identify all the likely bio-technical dual-use facilities in Iraq and visit them all. This required visits to nearly eighty separate facilities, exploiting the very intrusive inspection provisions to the full. The types of facilities visited ranged from pharmaceutical production plants, university laboratories, and medical stores to breweries and dairy factories. During several years of inspection activity only shreds of hard evidence of a program were uncovered. By late 1994, even more convinced that a substantial program existed, the biological inspection activity was intensified even further and a breakthrough was achieved when it came to light that Iraq had purchased substantial amounts of growth media (used as a culture medium for growing organisms) far in excess of that needed for the claimed medical use. They tried to cover up the true purpose with a trail of documentation that was proved to be forged. This evidence came to light at a time (March 1995) when at least two members of the Security Council began to press for the trade sanctions on Iraq to be lifted. This evidence was enough to convince them that a major program was being hidden. The many months of painstaking work by the UNSCOM team were beginning to bear fruit. The Iraqis persisted until the following July in denying an offensive program. Finally, giving way under the pressure of the evidence found by the Commission, and

See "Iraq's Biological Weapons Program"
Continued on Page 4

On the Inside

THOUGHTS FROM THE PENTAGON

Dr. Ted Prociv, Deputy Assistant to the Secretary of Defense (Chemical and Biological Matters)

By Dr. Ted Prociv

This is the third of our quarterly updates designed to keep the Chemical and Biological Defense (CBD) community up to date with the activities of interest in the Pentagon. Our office is the focal point on the Office of the Secretary of Defense (OSD) staff for three major areas of importance: the DoD Chemical and Biological Defense Program, the DoD Chemical Demilitarization Program, and the Chemical Weapons (CW) and Biological Weapons (BW) Arms Control Programs. This article gives a brief overview of the Chemical Weapons Convention (CWC) and will provide the current status of DoD preparations for its implementation.

CW/BW ARMS CONTROL:

The CWC will prohibit the development, production, stockpiling, and use of CW. Further, it will require the complete destruction of CW stockpiles and the facilities where they were produced within a 10-year period. The CWC will also ban the use of riot control agents as a method of warfare.

The CWC is commonly recognized as the most intrusive arms control instrument ever negotiated. The treaty will include a rigorous verification regime, including mandatory declarations of CW and certain chemical-related activity, routine inspections to verify the accuracy of the declarations, and short-notice challenge inspections to resolve CWC compliance concerns.

The CWC was negotiated over a period of 24 years (1968-92) in Geneva and was opened for signature in Paris in 1993. To date, the CWC has been signed by 160 nations and ratified by 47 nations. Only 32 nations have not signed the CWC (see lists on page 10). Six months following ratification by 65 nations, the CWC will formally enter into force (EIF) worldwide. Responsibility for international implementation of the CWC will be vested in the Organization for the Prohibition of Chemical Weapons (OPCW) which will be headquartered in The Hague, The Netherlands. At present, a CWC Preparatory Commission is active in The Hague developing preliminary protocols and procedures which will be employed by the OPCW following EIF of the CWC.

In the United States, the Senate is now considering the CWC for ratification. Many nations are watching the U.S. closely and are likely to ratify soon after we do. If U.S. ratification occurs by the summer of 1996, worldwide EIF of the CWC could follow by early next year.

Consistent with the requirements of DoD Directive 2060.1, our office is preparing to provide OSD staff oversight for DoD implementation and compliance with the CWC. Management of implementation and compliance by the Military Services and DoD Agencies and Activities will be accomplished by the On-Site Inspection Agency (OSIA), which has established a CW Treaty Management Office to accomplish this function.

OSIA has also implemented an extensive outreach program to provide information about the CWC and to enable facility preparation through the Defense Treaty Inspection Readiness Program (DTIRP). The DTIRP system, for which OSIA is the DoD Executive Agent, permits the assessment of susceptibility, as well as vulnerability, and the level of preparation needed, including recommendations for specific security countermeasures, to protect information concerning sensitive programs and technologies. OSIA provides DTIRP training and awareness services through such fora as industry seminars, mobile training teams, tabletop exercises, staff assistance visits, and mock inspections. OSIA also publishes a variety of DTIRP educational products (printed and video) and administers electronic bulletin boards to provide the most current information available concerning the CWC.

Through DTIRP, OSIA maintains an operational capability to deploy counterintelligence personnel and specialized equipment on short notice to support preparations at sites which have been identified for CWC inspections, both routine and challenge. This capability will be available to support DoD Agencies, Activities, and Contractors in order to ensure successful implementation of and compliance with the CWC.

See "Thoughts From The Pentagon" Continued on Page 10

NEW NICHE ON THE NET

The CBIAC has changed the URL for accessing our homepage.

Please visit this site for information on:

- The CBIAC (General Overview).
- CBIAC Products.
- Current Awareness Products.
- Inquiry and Referral Services.
- Information Products.
- Technical Area Tasks.

TAT FOCUS

Identification of Naval Aviation Requirements for Conducting Operations in a CB Environment

Last fall in New Orleans, Louisiana, a conference was conducted to identify and define Naval Aviation needs for operating in a chemical and biological (CB) threat environment. The objective of the meeting was to bring fleet aviation and shipboard operators together with acquisition managers and technical experts. These personnel established a dialogue which resulted in a definitive statement of aviation-related CB defensive requirements and their priority. Such a dialogue allowed program sponsors and the R&D community to identify CB defense requirements, plan investment strategies, and provide customer driven guidance leading to an affordable solution set to current CB defense needs.

The primary goals of the conference were as follows:

- record fleet input on key issues concerning threat information needs, CB defense requirements, and short/long term solutions
- obtain fleet validation of needs
- continue communications among fleet, technical, and acquisition staffs.

The conference was conducted using "The Round Table," a computer-mediated group decision support system which brings conference participants together in a collaborative environment to generate ideas, reach a consensus and solve problems. People present ideas simultaneously, making use of a comprehensive decision-support system that utilizes an analytic hierarchy process, dynamic process modeling, multiple attribute utility theory, and electronic brainstorming.

The Naval Aviation chemical and biological defense (CBD) community effectively used the Round Table to define materiel and non-materiel needs in this critical area. Inputs for this conference were entered by the various fleet representatives having subject matter expertise in each area of consideration. These inputs were then reviewed and collectively ranked using a network of laptop computers and state-of-the-art software. The results of this exercise are presently being staffed within the CB community. Final results will be incorporated into the Naval Aviation Chemical and Biological Warfare Defense Master Plan.

For this TAT, the Naval Aviation program manager (PM) placed a premium on obtaining direct input from key fleet operational personnel and technical experts on aviation CBD issues. The PM created a collaborative environment in which nearly 40 fleet personnel of many ranks and billets, along with systems developers, anonymously and simultaneously provided insight and commentary on the needs of today's CBD capabilities and what will be required of tomorrow's CBD systems. All areas of CBD — protection, detection, warning and identification, decontamination, and doctrine, training and analysis — were addressed. The Naval Aviation community identified and prioritized key CBD needs and requirements in each of these areas in a span of only two and a half days.

For further information on the Naval Aviation TAT, contact:

Mr. Eric Adcock
Battelle Crystal City
Tel: (703) 413-8866
Fax: (703) 413-8880
E-Mail: adcocke@battelle.org

Mr. Ken Goff, Sponsor
Naval Air Systems Command, AIR-4.1.8
Tel: (703) 604-6060 ext. 5644
Fax: (703) 604-2042

Mr. Joe Brumfield
Office of Naval Research, 341
Tel: (703) 696-4319
Fax: (703) 696-1212

For further information on the Battelle Round Table, contact:

Mr. John Lesko
Battelle Crystal City
Tel: (703) 413-8866
Fax: (703) 413-8880
E-Mail: lesko@battelle.org

CONTRACT AWARDS

1. Independent Evaluation of the Non-Stockpile.
   Mitre Corporation - Mitrek Division
   7525 Colshire Dr.
   McLean, VA 21050
   $377,023. 1 December 1995

2. Cross-Linked Crystals of Organo-phosphorous Hydrolase as High Performance Catalysts for the Breakdown of Chemical Agents and Pollutants.
   Altus Biologics Inc.
   40 Allston St.
   Cambridge, MA 02139
   $100,000. 15 December 1995

3. Improved Chemical Agent Monitor.
   Intellitec - Division of Technical Products Group
   2000 Brunswick Lane
   Deland, FL 32724-2001
   $14,304,631. 18 December 1995

4. Toxicological Agents Coveralls.
   Harris Manufacturing Co., Inc.
   500 Ingham Avenue
   Trenton, NJ 08638
   $407,360. 21 December 1995

5. Automatic Chemical Agent Alarm.
   a. Environmental Technologies Group
   1400 Taylor Avenue
   Baltimore, MD 21284
   $1,210,653. 21 December 1995

   b. Environics Oy
   Box 349
   50100 Mikkeli, Finland
   $843,287. 22 December 1995

   c. Graseby Dynamics Ltd.
   459 Park Avenue
   Bushey, Watford Herts WD2 2BW
   United Kingdom
   $1,456,977. 22 December 1995

6. Liquid Processing Chemical Vapor Deposition System.
   CVD Equipment Corp.
   Ronkonkoma, NY
   $197,000. 20 November 1995

"Iraq's Biological Weapons Program"

Continued from Page 1

driven by the desire to get sanctions lifted, the Iraqis finally admitted to having an offensive program, but only involving a limited number of agents. They claimed that although a certain amount of these agents had been produced they had not been weaponized.

Only a few weeks later, following the defection of General Hassan Kamal, Baghdad made available documents and additional information on all their weapons of mass destruction and missile programs. There were surprises in store in all fields which demonstrated the limitations of inspection, even of the most intrusive system ever conducted on a single country. This is not to say that on site inspection is of no value; on the contrary it can be a very powerful investigative tool. However, it is essential to take a pragmatic view of its potential, and the biological area, as is widely recognized, is probably one of the most difficult to deal with in this regard.

In the August 1995 revelations, the Iraqis admitted to weaponizing, and testing for weapons purposes, a wide range of agents. They declared that they had weaponized 6,500 liters (1,716 gallons) of anthrax and 10,000 liters (2,600 gallons) of botulinum toxin. In total quantity they had produced more than this, but this was the amount that they said filled in Al Hussein missile warheads and R400 free fall bombs. The total production quantities were reported as at least 19,000 liters (4,490 gallons) of botulinum toxin and 8,500 liters (2,210 gallons) of anthrax. In addition to these lethal agents, they reported that they had weaponized in the same delivery means the incapacitant aflatoxin (derived from a fungus) to a quantity of 1,580 liters (410 gallons) out of a total of 2,200 liters (572 gallons) produced. Among the range of agents they admitted to testing for weaponization are clostridium perfringens, ricin, viruses (including hemorrahagic conjunctivitis, rotavirus and camel pox). They also carried out work, including field trials, on a crop agent: wheat cover smut. As far as delivery systems are concerned, in addition to the systems already mentioned, development work and field trials had been conducted with aerial spray tanks (with both manned and unmanned aircraft), 122 mm rockets and 155 mm artillery rounds. Although parts of the programs were apparently unsuccessful, some of the work was very advanced; in particular the aerial spray tanks for the manned aircraft. By chance, during Desert Storm, a coalition bombing raid destroyed the prototype aerial spray tanks. The genesis of the whole program goes back to the early eighties and was developed by the Iraqis in the context of the war with Iran. The weaponization effort did not come to fruition until after the war had ended. In that context it is interesting to note that not only strategic use was being contemplated, but also tactical use with field artillery.

After the invasion of Kuwait and prior to Desert Storm, the production of anthrax and botulinum toxin was accelerated. If the Iraqi leadership is to be believed, this was claimed to enable a second strike capability against the Coalition forces in the event of a massive strike on Baghdad. Ambassador Rolf Ekeus, the Executive Chairman of UNSCOM, reported to the Security Council in his 11 October 1995 report (S/1195/864) that he had been told that authority for such use had been delegated to field commanders with the weapons deployed in January 1991 to four separate sites.

Iraq claims to have destroyed all the filled munitions and bulk agent after the end of the Gulf War. To date, this claim has yet to be proved. Visits to reported destruction sites are not likely to yield conclusive evidence five years after the event in any case. UNSCOM still faces a challenging verification task despite its free ranging inspection mandate. They also face delicate decisions on destruction of the facilities which participated in the offensive biological weapons program. Their decisions must take into account the need to preserve what slender evidence exists of the program and the added difficulty that some facilities are used for peaceful purposes such as the production of vaccines for veterinary use.

There is pause for thought in all this for the proponents of a strong verification protocol for the Biological and Toxin Weapons Convention. The technical and political challenges to developing a protocol that would be an effective deterrent to a would - be cheater seem formidable. Indeed there would seem to be a high risk of developing a system that could be exploited by a determined state to claim full compliance. This does not mean that some valuable confidence-building measures could not be strengthened - but their limitations must be clear to participating governments. It was a salutary experience, after nearly five years of dedicated and thorough work by UNSCOM, to hear Ambassador Ekeus reporting to the U.S. Senate on 21 March 1996 that he believed that the Iraqis were still concealing major parts of their illegal weapons programs, including a number of missiles which could include biological warheads. It is time to rethink verification for global weapons of mass destruction treaties.

Dr. Terence Taylor is the Assistant Director of the International Institute for Strategic Studies in the United Kingdom. Prior to his present appointment he served on the UNSCOM staff.

Improved CBIAC Bibliographic Database (CBIAC BD)

- High Speed Search Engine (BASISplus®)
- Advance Text Retrieval Capability
- Over 18,000 New Citations
- Accessible Via Modem or Internet

The CBIAC BD, one of the CBIAC User Accessible Databases (UDB), has been re-engineered to provide the user community with improved search capabilities and performance. Security measures now being installed will allow users to access over 45,000 citations in all CW/CBD subject areas via modem or Internet beginning May 15, 1996. To obtain access to the CBIAC BD, you must complete and return the application form enclosed in this newsletter. Along with your user authorization and password, you will receive the new CBIAC BD User's Manual. For further information, contact Judith M. Shetterly at (410) 676-9030.

ONGOING AND RECENT ACTIVITIES

Current Awareness

• Ms. Jeanne Rosser will be attending DNA's 5th Annual International Conference on Controlling Arms on June 3-6, 1996, at the Waterside Marriot Hotel and Conference Center in Norfolk, Virginia. The CBIAC will feature a display highlighting DNA sponsored Technical Area Tasks.

• The Biennial International Symposium on Alternatives in the Assessment of Toxicity: Issues and Progress is being coordinated for June 12-14, 1996 through a CBIAC Technical Area Task. Ms. Heather Cowan and Ms. Janice Rhodes are the points of contact for this conference. For more details, see the ad on page 10.

Information Acquisition and Processing

• Documents in the area of CW treaty implementation, CB detection, demilitarization, and the BW convention were added to the CBIAC collection during the second quarter, FY96.

Inquiry and Referral Services

• Last quarter the CBIAC received 175 inquiries. Over 14.3% of these were related to NBC Survivability and more than 10.8% of the questions asked were in the area of Chemical and Physical Properties. The chart shows the percentages for inquiry and referrals posed by various agencies for second quarter, FY96.

Products

• The Worldwide Chemical Detection Equipment Handbook is now available. See the Special Offer on page 11.

• A new critical review entitled, Critical Review of Sources of Chemical and Physical Properties Data for Militarily Significant Compounds, will be available in May, 1996. Source books, reference books, documents and over forty databases have been profiled and reviewed.

Technical Area Tasks (TATs)

• Since the last newsletter, eight new tasks were awarded, effort was added to 28 ongoing tasks and two tasks have been completed. As of 29 March, 74 TATs have been awarded and work has been added to 63 tasks. Total value of TATs awarded is over 19.7 million dollars.

• Do not hesitate to contact Judith M. Shetterly at the CBIAC if you would like further information on a CBIAC TAT. In order for us to help you most efficiently, please furnish the Government Contract Number you are working on (if any), the reason(s) you want the information, and your company address and phone number. We need this information in order to obtain release of information from the TAT sponsor.

Completed:

Task	Description/Sponsor
15	Conduct a Market Survey of Current and Developmental NBC Items Applicable for Use on a Combat Vehicle. USA/ERDEC

Underway:

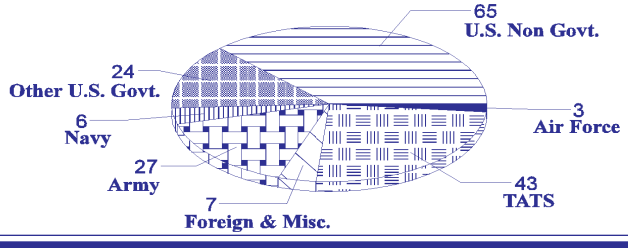
Task	Description/Sponsor
106	Obtain Inhalation and Ocular Toxicity Data on Unique Army Materiel Containing HD, HN, or L Using the Rat as an Animal Model USA/ERDEC
109	Evaluate the Co-injecting of Silicone with Organic Elastomers for Use with RESPO 21 Masks USA/ERDEC
112	Identify and Compile Results of Past NBC Field Studies Regarding Operational Degradation in a CB Battlefield Environment and Identify Datagaps. OSD/National Defense Univ.
116	Evaluate the Protection Provided by the MCU 2/P with Second Skin and the JSLIST Integrated Hood USAF/HSC
118	Provide Integrated Logistics Planning Support for Navy Collective Protection and CB Detection Systems USN/NAVSEA
121	Develop and Validate Protective Clothing Standardized Guidelines USN/NCTRF
126	Develop and Implement Analytical Methods to Evaluate the Effectiveness of Three MMD-1 Reactor Chemistries for the Destruction of VX, HD and GB USA/ERDEC

See "Ongoing and Recent Activities"
Continued on Page 9

Editorials Welcomed!

If you would like to submit an editorial for publication in our next issue of the CBIAC Newsletter, please contact Mary Jo Waters at the CBIAC. For those interested in submitting editorials, we ask that you provide us with an electronic copy as well as a hard copy of your editorial.

INQUIRY SOURCES
Second Quarter, FY96



CALENDAR OF EVENTS

The CBIAC highlights conferences, symposia, meetings, exhibitions and workshops of interest to the CB community in every issue of our newsletter. We invite CBIAC users to submit information on various events to the attention of Elizabeth L. Hamm. She may be reached at the address, phone and fax numbers on the back page of this newsletter, or via the internet: hamme@battelle.org. Due to space limitations, the CBIAC will accept submissions on a first-come, first-served basis and reserves the right to reject submissions.

1996 MEETINGS

Date/Name/Location	Contact(s)
April 29-May 2, 1996 Undersea Warfare Keyport, WA	American Defence Preparedness Association (ADPA) 2101 Wilson Blvd., Suite 400 Arlington, VA 22201-3061 Tel: (703) 522-1820 Fax: (703) 522-1885
April 30-May 2, 1996 NBC Modeling & Simulation Conference San Diego Marriott La Jolla, CA	DoD Nuclear Information Analysis Center (DASIAC) Attn: Dianne McCune, Conf. Mgr. 2560 Huntington Avenue, Suite 400 Alexandria, VA 22303 Tel: (703) 329-7122 E-Mail: nbcms-alx1@kaman.com
May 14-17, 1996 Global Demilitarization Symposium & Exhibition John Ascuaga's Nugget Reno, NV	American Defence Preparedness Association (ADPA) 2101 Wilson Blvd., Suite 400 Arlington, VA 22201-3061 Tel: (703) 522-1820 Fax: (703) 522-1885
May 20-24, 1996 Technical Information Tampa, FL	American Defence Prepardness Association (ADPA) 2101 Wilson Blvd., Suite 400 Arlington, VA 22201-3061 Tel: (703) 522-1820 Fax: (703) 522-1885
June 3-6, 1996 DNA's 5th Annual International Conference on Controlling Arms Waterside Marriott Hotel & Conference Center Norfolk, VA	Center for Verification Research Attn: Richard S. Soll/Sheetal Patel 8500 Cinder Bed Road P.O. Box 1148 Newington, VA 22122-9998 Tel: (703) 550-6811 or (703) 550-0430 Fax: (703) 550-1986
June 4-6, 1996 TECOM Test Technology Symposium '96 Kossiakoff Center Johns Hopkins University Applied Physics Laboratory Laurel, MD	TRI-S Incorporated Attn: Edward V. Somody or Paula Kueberth 323 South Union Aveue Havre de Grace, MD 21078 Tel: (410) 273-9414 Fax: (401) 273-7470 E-Mail: tris@tris.com
June 12-14, 1996 4th Biennial International Symposium on Alternatives of Toxicity: Issues and Progress Edgewood Area Conference Center Aberdeen Proving Ground, MD	Battelle Edgewood Operations Attn: Heather Cowan/Janice Rhodes 2012 Tollgate Road, Suite 206 Edgewood, MD 21015 Tel: (410) 569-0200 Fax: (410) 569-0588 E-Mail: cowanhl@battelle.org or rhodesj@battelle.org
June 18-20, 1996 64th Military Operations Research Society Symposium "Leveraging Technology for the Military Analyst" Fort Leavenworth, KS	Military Operations Research Society (MORS) Attn: Cynthia Kee LaFreniere 101 South Whiting St., Ste 202 Alexandria, VA 22304-3483 Tel: (703) 751-7290 Fax: (703) 751-8171 E-Mail: morsoffice@aol.com
June 24-28, 1996 1996 Scientific Conference on Obscuration and Aerosol Research	Battelle Edgewood Operations Attn: Amy Skarzenski/ Charles Braungart 2012 Tollgate Road, Suite 206 Edgewood, MD 21015 Tel: (410) 569-0200 Fax: (410) 569-0588 E-Mail: braunga@battelle.org skarzena@battelle.org
June 24-28, 1996 The First U.S.-Japan Symposium on Advances in NDT Turtle Bay Hilton Kahuku, Oahu, HI	ASNT Attn: Stan Rokhlin P.O. Box 28518 Columbus, OH 43228-0518 Fax: (614) 274-6899
June 24-29, 1996 Eurosatory '96 Land Defence Equipment Paris-Le Bourget, FRANCE	GICAT Comissariat Générale Eurosatory 64 rue Ranelagh 75016 Paris France Tel: 33 1 42 30 71 11 Fax: 33 1 42 30 70 88
June 24-27, 1996 20th Army Science Conference "Science and Technology for Force XXI" Norfolk Waterwide Marriott & Convention Center Norfolk, VA	20th Army Science Conference 16441 Benns Church Boulevard Smithfield, VA 23430 Tel: (804) 357-4011 Fax: (804) 357-5108
Sept TBD, 1996 Night Vision '96 London, UNITED KINGDOM	Shephard Conferences 111 High Street Burnham, Bucks SL1 7JZ United Kingdom Tel: 44 628 604746 Fax: 44 628 664075
Sept 9-12, 1996 Emerging Technologies in Hazardous Waste Management VIII The Sheraton Civic Center Hotel Birmingham, AL	American Chemical Society c/o Meeting Makers P.O. Box 70096 Marietta, GA 30007-0096 Tel: (404) 894-2856 ACS Hotline: (404) 365-2447
Sept 10-12, 1996 TECOM Artificial Intelligence Technology Symposium Kossiakoff Center Johns Hopkins University Applied Physics laboratory Laurel, MD	TRI-S Incorporated Attn: Edward V. Somody or Paula Kueberth 323 South Union Avenue Havre de Grace, MD 21078 Tel: (410) 273-9414 Fax: (410) 273-7470 E-Mail: tris@tris.com
Oct 8-10, 1996 The Impact of Low Observable Technology on Aircraft Survivability Naval Postgraduate School Monterey, CA	American Defence Preparedness Association (ADPA) 2101 Wilson Blvd., Suite 400 Arlington, VA 22201-3061 Tel: (703) 522-1820 Fax: (703) 522-1885

TECHNOLOGY TRANSFER

This column serves the CB community by showcasing new technologies, by communicating industry needs and by providing sources of additional technology transfer information. This is part two in a series of articles from TECHNOLOGY EXCHANGE: A Guide to Successful Cooperative Research and Development Partnerships (ISBN 0-935470-86-7, $29.95). Here the authors look at the environment for successful partnerships and the need for structuring a win-win attitude to overcome the cultural barriers to success. Technology Exchange is co-authored and edited by John Lesko and Michael Irish. This title and other books on R&D management are available through Battelle Press, 505 King Avenue, Columbus, OH 43201. To order call: 1-614-424-6393. The CBIAC Newsletter Staff invites feedback from its readers for this column. Please submit your comments to Don McGonigle (mcgonigl@battelle.org).

The Present Environment for Technology Partnerships

Throughout the 40-year span of the Cold War, the federal defense establishment played the lead role in defense procurement and program oversight with great passion. Industry played the supporting role of supplying people, materials, and production facilities to the mission effort with equal fervor. The drama that played out in many cases was a confrontation over accounting methods, billing procedures, and process controls. Industry reacted negatively to what it considered intrusions into their business practices, while government officials argued that they were acting as stewards of the taxpayers' dollars. In hindsight, critics on the side of industry could claim that the government was overacting, while critics on the government side could say that industry was overreacting.

Since the end of the Cold War, leaders in government and industry have recognized the need to adapt to a different environment. That realization translates to an imperative for minimum bureaucracy, clear communications, better understanding, and more cooperative behavior between the public and private sectors.

Both industry and government must focus more attention and interest on the potential for developing user friendly and readily marketable applications using the one-of-a-kind, world-class expertise and technology that commercial and federal laboratories alike foster. And to this end, government must recognize that industry not only desires to make a profit in their activities profit is the driver of industrial activity. Industry, on the other hand, must dispel the notion that government can only be a sluggish bureaucracy, and learn what can be accomplished with the evolving enabling technology policy, by participating in dialog on needed process improvements and by conducting some structured inquiries on federal capabilities.

Successful Cooperative R&D Programs

The leaders in cooperative R&D have demonstrated that technology transfer must be bi-directional, a win-win situation. They realize that technology transfer and cooperative R&D can have a positive impact on mission performance. Technology transfer and cooperative R&D are increasingly being recognized as activities that can have a payback, and will enhance mission performance.

These leaders possess a pioneer's or entrepreneurial spirit. Successful practitioners have proven that technology transfer and cooperative R&D, executed with the understanding and support of the corporate leadership, can be successful from both the research and profitability points of view.

Participants in successful partnerships cite the phenomenal investment leverage gained through cooperative R&D, which in some cases is calculated at having doubled in value their organization's investment. They also reference the long-term economic and national security benefits of introducing otherwise latent technology into the commercial sector.

Future articles from Technology Exchange will focus on the importance of bridging organizations, CRADA negotiations, and metrics for success.

STOCKPILE INFORMATION ON THE INTERNET

As part of the public outreach program, the Office of the Program Manager for Chemical Demilitarization has created an Internet Website: http://www-pmcd.apgea.army.mil for access to information on chemical stockpiles and alternative technologies. Information repositories have also been created at the following locations:

Harford County Libraries
Aberdeen Branch
21 Franklin Street
Aberdeen, MD 21001
(410) 273-5608

Edgewood Branch
2205 Hanson Road
Edgewood, MD 21040
(410) 612-1600

Miller Library
Washington College
Chestertown, MD 21620
(410) 778-2800

Baltimore County Library
Essex Branch
1110 Eastern Blvd.
Essex, MD 21221
(410) 887-0295

Vigo County Public Library
Attn: Susan Dehler
Archives, Main Branch
1 Library Square
Terre Haute, IN 47801
(812) 232-1113

Clinton Public Library
Attn: Delores Ragin
4th & Blackman
Clinton, IN 47842
(317) 832-8349

Newport-Vermillion County
Public Library
Attn: Becky Gosnell
P.O. Box 97
Newport, IN 47966
(317) 492-3555

Rockville Public Library
Attn: Cindy Hein
106 N. Market
Rockville, IN 47872
(317) 569-5544

Danville Public Library
Attn: Roberta Allen
Archives Department
307 N. Vermillion
Danville, IL 61832
(217) 477-5228

CB NEWS EXCERPTS

In order for the CBIAC to inform its readers of recent Chemical/Biological Defense activity throughout the United States and around the world, we have compiled a list of related CB news articles and have taken excerpts from them to create brief overviews. Please note that the CBIAC does not provide secondary distribution of articles. We can, however, provide direction on where to find an article of interest.

Morales, Mickey. Alternative Technologies: Three Ways May Aid Bulk Agent Disposal, The Catalyst, 1995 December. A recent announcement in Commerce Business Daily prompted new looks into three disposal technologies which are: electrochemical oxidation (Subsea International, Inc.), hydrocracking (ELI ECO Logic, Inc.), and molten metal (M4 Environmental L.P., Inc.). The Army currently researches neutralization and neutralization followed by biodegradation technologies. Vendors of these technologies will submit test data and additional information which the National Research Council (NRC) will review. Current baseline incineration technology endorsed by the NRC will continue until a safer, less expensive, or more rapidly executable technology develops.

Filbert, Barbara. Meeting Features Disposal Alternatives, APG News, 1996 February 7. A local gathering at Edgewood High School featured a briefing by Lt. Col. Steve Landry, Product Manager for Alternative Technology and Approaches at PM Chem Demil. The two sites most likely to be affected by the development of a cost-effective non-incineration technology are Aberdeen Proving Ground (APG) in Maryland and Newport Chemical Activity in Indiana, because they both are low-volume bulk storage sites. The meeting also featured displays on the processes for the technologies discussed.

Gervasoni, Jane. Medical Unit Prepares to Deploy, APG News, 1996 January 24. The Blizzard of '96 gave members of 520th Theater Army Medical Laboratory (TAML) an opportunity to train for their deployment to Bosnia with Operation Joint Endeavor. An exercise was set up at Aberdeen Proving Grounds for the ten person team which will provide disease assessment surveillance. Four enlisted soldiers and six officers will perform field analyses and provide strategies for correcting targeted environmental health risks. TEMPER tents and DEPMEDS units will provide laboratory and administrative space. Telemedicine technologies will allow soldiers to receive technical guidance from remote sites.

Biological Warfare Weapon Advances Spawn Deadly Destruction Capability, National DEFENSE, 1996 January. A 1994 report from the Army's Medical Research Institute of Infectious Diseases observed that the United States is "ill suited to face a biological warfare threat." Col. Randall J. Larsen, USAF, and Dr. Robert P. Kadlec, a physician assigned to the Office of the Secretary of Defense for International Security Policy, have written a study on the current biological warfare capabilities of 100 nations and the advancements in dual-use technology. For example, Col. Larsen and Dr. Kadlec pointed out that of these 100 nations, 20 are actively developing offensive programs, especially in Third World nations where the term "poor man's atom bomb" is no longer just a slogan. The five components of a biological warfare program are: agents, a production capability, weaponization, delivery systems, and defensive measures. Of these components, weaponization and delivery have been the most challenging phases, but with the dramatic breakthroughs seen in the last two or three decades in these areas, "penny-for-penny and pound-for-pound [biological warfare] is the most lethal weapon of mass destruction."

Libya Close to Finishing a Huge Chemical Weapons Plant: Factory is Being Built in Hollowed-out Mountain, The Sun, 1996 February 25. U. S. intelligence services say the world's largest chemical weapons plant will be located 40 miles from Tripoli. Under direction of Col. Muammar el Kadafi, the project will cover six square miles and may be finished as early as 1997. Kadafi says the work is for an irrigation system; however German intelligence services have copies of the building specifications from companies that helped in construction of the tunnel. If the plant is operational it will be able to produce the ingredients for tons of poison gas a day.

NEWS DEFENSE E-JOURNAL AVAILABLE ON WEB

The Defense Technical Information Center (DTIC) and Battelle have announced that the "Proceedings of the DTIC/Battelle Information Technology SummIT," a gathering of information technology experts from industry, government, and academia, are available online at http://www.dtic.mil/summit.

The Information Technology "summIT," held in August 1995 at Battelle headquarters at Columbus, Ohio, represented a watershed event in the defense community's approach to creating, managing, and using scientific and technical information.

These proceedings are presented in the form of an electronic magazine that offers commentary from Michael Schrage (futurist, MIT Media Lab researcher, and author), Dr. Charles Herzfeld (former defense official and a founder of the Internet), and Kurt Molholm (presenting DTIC's future vision). Technical papers and the results from "summIT" workshops also are featured. A readers survey and comment form are provided for online "letters to the editor."

Participants in the "summIT" explored a number of topics ranging from new Internet search tools to the use of groupware, a class of software that allows users in different locations to interact, to facilitate R&D collaboration.

The e-journal project was announced by Ms. Carlynn Thompson, Director of the Research Development and Acquisition Information Support Directorate of DTIC, on March 6, 1996 at the "1996 DoD IAC Technical Symposium" held at Johns-Hopkins University's Applied Physics Laboratory in Laurel, Maryland.

For additional information call John Lesko, at (703) 413-8866, send E-mail to Lesko@battelle.org, or submit your feedback via the online survey/comment card found online at the "summIT" webmaster page.

SELECTED TECHNICAL RESPONSES

This section of the newsletter contains recent technical inquiries and responses on subjects we feel are of interest to our users. The information presented has been edited to conserve space. If you would like further detail, please contact Steven Jones at the CBIAC and reference the number indicated in parentheses.

Q: What companies produce gas masks in Italy? (Ref. 96-0245)

The following information was furnished by the Italian Trade Commission (ITC):

Sekur DPI S.r.I.
Via Torrespaccata 140
00169 Roma
Tel: 39 6 23267700
Fax: 39 6 261297

Covera S.n.c.
Via Ternana Km.9 02034
Montopoli di Sabina (RI)
Tel: 39 765 322027
Fax: 39 765 322004

Drael Infortunistica
Via S. Giusto 49
20153 Milano
Tel: 39 2 40092042
Fax: 39 2 48705820

Minimax Via A. Ristori
31/RSampierdarena
16151 Genova
Tel: 39 10 6450004
Fax: 39 10 6450450

Sare Sud S.p.A.
Via A. de Saliba 24
90145 Palermo
Tel: 39 91 206189
Fax: 39 91 2062033

Q: What quantities of stored agent munitions are located at Blue Grass Chemical Activity in Lexington, Kentucky? (Ref. 96-0216)

A: The table below shows the types of munitions and quantities of stored agent at the Blue Grass Chemical Activity:

Table 1
Blue Grass Chemical Activity, Kentucky
Specific Munitions

ITEM	AGENT FILLED	ITEM QUANTITY	AGENT (pounds)
155MM projectiles	H-blister	15,492	181,260
8" projectiles	GB-nerve	3,977	57,660
115MM rockets	GB-nerve	51,716	553,360
115MM rocket warheads	GB-nerve	24	260
155MM projectiles	VX-nerve	12,816	76,900
M55 rockets	VX-nerve	17,733	177,340
M55 rockets warheads	VX-nerve	6	60

Q: What is Hopcalite as used in a "Hopcalite filter?

A: Hopcalite Catalyst is a mixture of manganese dioxide (MnO_2) and copper oxide (CuO) developed for low temperature service in systems designed to remove carbon monoxide (CO) from air streams. Hopcalite will also dissociate ozone (O_3) at low temperatures as well. For further information, contact:

Callery Chemical Company
(Division of Mine Safety
Appliances Company)
P.O. Box 429
Pittsburgh, PA 15230

LINK YOUR HOMEPAGE TO THE CBIAC!

If your organization works in CB Defense and would like us to provide our www homepage users with a link to your homepage, please e-mail Steven Jones (joness@battelle.org) a brief description of how your organization is involved or related to CB matters along with the URL (web address) for your homepage. The CBIAC will review all submissions and select those which are appropriate. You will be notified of our determination.

"Ongoing and Recent Activities"

Continued from Page 5

CBIAC STATISTICS
(Second Quarter, FY 96)

Total CBIAC documents accessible through DTIC DROLS: 7,842

Shared[1]: 4,648 Unique[2]: 3,194

Total documents added to the CBIAC BD during Second Quarter, FY96: 659

Total document citations available through the CBIAC BD: 46,015

Total documents on site: 24,547

Total inquiries received: 175

- Technical: 54
- Informational: 31
- Bibliographic: 79
- Referral: 11

Total TATs awarded since contract initiation: 74

- Completed: 7
- Ongoing: 67

Total newsletter subscribers: 2,250

1 Existing DTIC records appended with CBIAC terms
2 New DTIC records created by the CBIAC

Thank You

CBIAC USER SURVEY

"Thank you" to the readers who completed and returned the CBIAC User Survey that appeared in the Winter-1996 issue of the CBIAC Newsletter. However, the number of responses we received did not reflect the opinions of the majority of our readers. Do not let a small number of readers be the deciding votes. Your survey responses are used to improve our services and determine the topics for future products. If you have not completed the survey from our last CBIAC Newsletter, please take a moment to do so now.

Your input does make a difference!

"Thoughts From The Pentagon"

Continued from Page 2

Questions about any aspect of the CWC or the status of OSD preparation for implementation and compliance may be directed to Dr. J.E. (Ned) Covington of this office at telephone (703) 602-5625 or FAX (703) 602-5742. Point of Contact for the OSIA CW Treaty Management Office is Mr. Dirk Wyckoff at telephone (703) 810-4587 or FAX (703) 810-4037.

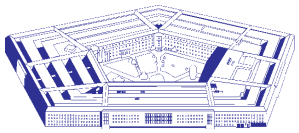
CWC Signatories and Ratifiers

Afghanistan
Albania (11 May 94)
Algeria (14 Aug 95)
Argentina (2 Oct 95)
Armenia (27 Jan 95)
Australia (6 May 94)
Austria (17 Aug 95)
Azerbaijan
Bahamas
Bahrain
Bangladesh
Belarus
Belgium
Benin
Bolivia
Brazil
Brunei Darussalam
Bulgaria (10 Aug 94)
Burkina Faso
Burma
Burundi
Cambodia
Cameroon
Canada (26 Sep 95)
Cape Verde
Cent. African Republic
Chad
Chile
China
Columbia
Comoros
Congo
Cook Islands (15 Jul 94)
Costa Rica
Cote d'Ivoire (18 Dec 95)
Croatia (23 May 95)
Cuba
Cyprus
Czech Republic
Denmark (13 Jul 95)
Djibouti
Dominica
Dominican Republic
Ecuador (6 Sep 95)
El Salvador (30 Oct 95)
Equatorial Guinea
Estonia
Ethiopia
Fiji (20 Jan 93)
Finland (7 Feb 95)
France (2 Mar 95)
Gabron
Gambia
Georgia (27 Nov 95)
Germany (12 Aug 94)
Ghana Greece (22 Dec 94)
Guatemala
Guinea
Guinea-Bissau
Guyana
Haiti
Holy See
Honduras Hungary
Iceland
India
Indonesia
Iran
Ireland
Israel
Italy (8 Dec 95)
Japan (15 Sep 95)
Kazakhstan
Kenya
Korea (South)
Kuwait
Kyrgyzstan
Laos
Latvia
Lesotho (7 Dec 94)
Liberia
Lichtenstein
Lithuania
Luxenbourg
Madagascar
Malawi
Malaysia
Maldives (31 May 94)
Mali
Malta
Marshall Islands
Mauritania
Mauritius (9 Feb 93)
Mexico (29 Aug 94)
Micronesia
Moldova
Monaco (1 Jun 95)
Mongolia (17 Jan 95)
Morocco (28 Dec 95)
Namibia (27 Nov 95)
Nauru
Nepal
Netherlands (30 Jun 95)
New Zealand
Nicaragua
Niger
Nigeria
Norway (7 Apr 94)
Oman (8 Feb 95)
Pakistan
Panama
Papua New Guinea
Paraguay (1 Dec 94)
Peru (20 Jul 95)
Philippines
Poland (23 Aug 95)
Portugal
Qatar
Romania (15 Feb 95)
Russian Federation
Rwanda
Samoa
San Marino
Saudi Arabia
Senegal
Seychelles (7 Apr 93)
Sierra Leone
Singapore
Slovakia (27 Oct 95)
Slovenia
South Africa (13 Sep 95)
Spain (3 Aug 94)
Sri Lanka (19 Aug 94)
St. Kitts & Nevis
St. Lucia
St. Vincent & Grenadines
Swaziland
Sweden (17 Jun 93)
Switzerland (10 Mar 95)
Tajikistan (11 Jan 95)
Tanzania
Thailand
Togo
Tunisia
Turkey
Turkmenistan (29 Sep 94)
Uganda
Ukraine
United Arab Emirates
United Kingdom
United States
Uruguay (6 Oct 94)
Uzbekistan
Venezuela
Vietnam
Yemen
Zaire
Zambia
Zimbawe

* dates in parenthesis are ratified dates

CWC Non-Signatories

Andorra
Angola
Antigua & Barbuda
Barbados
Belize
Bhutan
Bosnia-Hercegovina
Botswana
Egypt
Eritrea
Grenada
Iraq
Jamaica
Jordan
Kiribati
Lebanon
Libya
Macedonia
Mozambique
North Korea
Sao Tome & Principe
Solomon Islands
Somalia
Sudan
Suriname
Syria
Taiwan
Tonga
Trinidad & Tobago
Tuvalu
Vanuatu
Yugoslavia



ANNOUNCEMENT AND CALL FOR PAPERS

4TH BIENNIAL INTERNATIONAL SYMPOSIUM ON

ALTERNATIVES IN THE ASSESSMENT OF TOXICITY: ISSUES AND PROGRESS

12-14 JUNE 1996

Edgewood Area Conference Center
Aberdeen Proving Ground, Maryland

Sponsored By:
U.S. Army Edgewood Research, Development and Engineering Center

In Coordination With:
National Capital Area Chapter - Society of Toxicology
Sigma Xi
Others to be Announced

PLATFORM AND POSTER PRESENTATIONS WELCOME!
FOR REGISTRATION, PLEASE CALL HEATHER COWAN AT (410) 569-0200

For Administrative Information Contact:
Heather Cowan or Janice Rhodes, (410) 569-0200

For Technical Information Contact:
Dr. Harry Salem, (410) 671-3034

OFFICE OF ATOMIC ENERGY CHANGES NAME

On February 13, 1996, the Department of Defense announced that the Office of the Assistant to the Secretary of Defense for Atomic Energy has changed its name to the Office of the Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs.

The name changed in Public Law 104-106, under Title IX of the FY'96 Defense Authorization Act which was signed by the President on February 10, 1996. The name change better reflects the current functions and new missions of the office.

The Atomic Energy Act of 1954 established the position of Assistant to the Secretary of Defense for Atomic Energy with the responsibility of providing technical advice on nuclear weapons to the Secretary.

Dr. Harold P. Smith has been the Assistant to the Secretary of Defense for Atomic Energy since June 1993. He has led the transition and expansion of the responsibilities of this office. Today he retains the responsibilities of managing nuclear matters and maintaining the nuclear stockpile as well as serving as the Secretary to the Nuclear Weapons Council. Additionally, the following responsibilities have been added or expanded upon:

- Chemical matters to include destruction of chemical weapons in the United States and Russia.
- Biological matters to provide passive defense capability against the threat of biological weapons.
- Arms control treaties and agreements implementation and counterproliferation programs.
- Cooperative threat reduction program to assist with elimination of weapons of mass destruction with states of the former Soviet Union.

Additionally, Dr. Smith is responsible for overseeing the Defense Nuclear Agency and The On-Site Inspection Agency.

Chemical and Biological Defense Information Analysis Center

CBIAC

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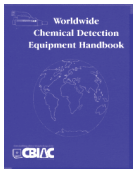
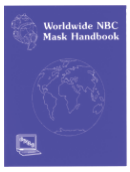
Special Handbook Offer!





Purchase the Worldwide Chemical Detection Equipment Handbook at the regular price of $299.95 and receive the Worldwide NBC Mask Handbook for $99.95 (a savings of $200.00).

•Valuable resources for engineers and scientists involved in CB R&D efforts, the intelligence community, the Chemical Weapons Convention (CWC) verification and compliance communities, equipment evaluators, foreign governments and embassies, news media, military libraries, information centers, and more.

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*Please allow 4 to 6 weeks for delivery. Price includes tax, shipping and handling.

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P.O. Box 196
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Credit Card Number

Signature | Exp. Date

The CBIAC NEWSLETTER is a quarterly publication of the Chemical Warfare/Chemical and Biological Defense Information Analysis Center (CBIAC). The CBIAC is a Department of Defense (DoD) Information Analysis Center (IAC), administratively managed by the Defense Technical Information Center (DTIC) under the DoD IAC Program. The Contracting Officer's Technical Representative is Mr. Joseph Williams. He may be reached at:

Technical Director, ERDEC
Attn: SCBRD-RTA (Joseph Williams)
APG-EA, MD 21010-5423
Tel: (410) 671-4878 Fax: (410) 671-2649
DSN: 584-4878
Internet: jdwillia@apgea.army.mil.

Government agencies and private industry under contract to the Department of Defense can contact the CBIAC which serves as a center for the acquisition, compilation, analysis and dissemination of information relevant to chemical warfare and chemical and biological defense technology. The CBIAC staff is available to answer questions from 7:00 a.m. to 5:00 p.m, EST.

The CBIAC is located in Building E3330, Aberdeen Proving Ground-Edgewood Area, Maryland 21010.

The CBIAC mailing address is shown below:

CBIAC
P.O. Box 196
Gunpowder Branch APG, MD 21010-0196
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